OIPE IAP46 APR 17 2006 PATENT & TRADEMARK OFFICE

REMARKS

Claims 1-38 are pending in the application.

Claims 1-38 stand rejected.

Rejection of Claims under 35 U.S.C. §103

Claims 1-38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Shinohara, U.S. Patent No. 6,067,298 (Shinohara), in view of Yin, et al., U.S. Patent No. 6,490,251 B2 (Yin). Applicants respectfully traverse this rejection.

Claim 1 recites:

> An apparatus for switching packets from a network, the apparatus comprising:
> an ingress receiver that receives inbound packets from the network, said inbound packets being destined for an associated output queue;
> a switch fabric coupled to receive said inbound packets from the ingress receiver; and
> an output traffic manager coupled to receive outbound packets from the switch fabric, wherein
> the output traffic manager includes at least one queue,
> the output traffic manager selectively stores outbound packets into a selected queue and selectively drops outbound packets when the selected queue is at a certain fullness level, and
> approximately when the output traffic manager drops outbound packets or is about to drop said outbound packets, the output traffic manager communicates to the ingress receiver to drop inbound packets destined for the selected queue.

The cited art does not teach or suggest a system in which, "approximately when the output traffic manager drops outbound packets or is about to drop said outbound packets, the output traffic manager communicates to the ingress receiver to drop inbound packets destined for the selected queue," as recited in claim 1.

Application of Shinohara to claim 1:

Shinohara is relied upon to teach all elements of claim 1, except for "the output traffic manager communicates to the ingress receiver to drop inbound packets destined for the selected queue." Office Action mailed January 9, 2006 (hereinafter referred to as "OA"), pp. 2-3. The Office Action relies on Yin to teach "the output traffic manager communicates to the ingress receiver to drop inbound packets destined for the selected queue." Office Action, p. 3.

Shinohara discloses an "ATM switching system [consisting] of a core switch section (CS section) 102, an input buffer module section (IXB section) 20, and an output buffer module section (OXB section), 30." Shinohara, col. 6, lines 8-11. The Office Action equates elements 103 and 32 with the "output traffic manager coupled to receive packets from the switch fabric" of claim 1. Element 103 is a core switch queue that is part of core switch section 102. Shinohara, col. 7, lines 18. Element 32 is a class/line separator, included within the output buffer module section 30, that "identifies the destination output line and the service class type of an ATM cell, and stores a proper output line corresponding queue 1." Shinohara, col. 7, lines 24-28. The Office Action also equates queue 31 in FIG. 1 with the "at least one queue" recited in claim 1.

The cited art does not teach or suggest an "output traffic manager... selectively drops outbound packets when the selected queue is at a certain fullness level:"

The Office Action cites col. 3, lines 37-44 of Shinohara, which describe the behavior of queues in input buffer module section 20, as teaching the feature of claim 1 that recites "the output traffic manager... selectively drops outbound packets when the selected queue is at a certain fullness level." Office Action, p. 2. The cited portions of Shinohara recite: "the buffer occupancy of an output line corresponding queue of the input buffer module section is observed for each logical channel, and discards a packet when a buffer occupancy of the logical channel of the packet in the output line corresponding queue exceeds a predetermined threshold value" (emphasis added). This portion of Shinohara concerns the input buffer module section (element 20 of FIGs. 1 and 8 of Shinohara). Core switch queue 103, class/line separator 32, and/or queue 31 of FIG.

8, which are the elements that the Office Action equates with an output traffic manager coupled to receive packets from the switch fabric, are not included in input buffer module section 20. See, e.g., Shinohara, FIG. 1. No portion of either Shinohara or Yin has been cited as teaching or suggesting that the behavior of input buffer module section 20 be implemented by the elements equated with the output traffic manager of claim 1. Accordingly, the teachings in col. 3, lines 37-44, which describe the operation of input buffer module section 20, appear to be completely unrelated to the operation of core switch queue 103, class/line separator 32, and queue 31 of FIG. 8. For at least this reason, the cited portion of the art clearly neither teaches nor suggests that the core switch queue 103, class/line separator 32, and/or queue 31 "selectively drops outbound packets when the selected queue is at a certain fullness level." No portions of Yin have been cited as teaching or suggesting this feature of claim 1, either. For at least this reason, claim 1 is patentable over the cited art.

The cited art does not teach or suggest "approximately when the output traffic manager drops outbound packets or is about to drop said outbound packets, the output traffic manager communicates to the ingress receiver to drop inbound packets destined for the selected queue:"

The portions of Shinohara cited as teaching this feature recite, in part: "In each output line corresponding queue within the output buffer module section 30, when the queue length Qoxbl exceeds the threshold value Qth_bpoxbl, the output buffer module section 30 originates the back pressure signal (BP_OXBL) 70 to all input buffer module sections. The input buffer module section 20 ceases to transmit cells to the output line to which the BP_OXBL signal 70 has been originated." Shinohara, col. 8, lines 12-17. Thus, Shinohara teaches a system in which one or more input buffer module sections cease to transmit cells to an output line if a back pressure signal has been originated.

Shinohara's communication to the input buffer module sections is used to cause the ingress buffer module sections to stop sending packets to the output line, not to cause the input buffer module sections to begin dropping packets. Shinohara neither teaches nor suggests a communication regarding the need to drop packets. Thus, as noted by the

Examiner in the Office Action mailed January 9, 2006 (hereinafter referred to as "OA"), "Shinohara fails to teach the ingress receiver to drop inbound packets destined for that queue when it receives a communication with output manager." OA, pp. 2-3.

Yin teaches a system in which "packet discard decision block 430 decides when to drop a packet to be transmitted over the ATM network based on the ATM network feedback information carried in RM cells received from the ATM network and per VC buffer usage." Yin, col. 6, lines 15-20. Thus, in Yin's system, packet drop occurs in response to feedback received from the network, not in response to feedback received from an output traffic manager.

Neither the cited portions of Yin nor the cited portions of Shinohara, alone or in combination, teach or suggest "approximately when the output traffic manager drops outbound packets or is about to drop said outbound packets, the output traffic manager communicates to the ingress receiver to drop inbound packets destined for the selected queue." Instead, Yin teaches that packets are dropped based on feedback information received from a network, and Shinohara teaches that packets will not be sent to an output buffer module section if that output buffer module section has originated a back pressure signal. In particular, neither reference teaches that an output traffic manager should communicate to an ingress receiver to drop inbound packets.

The Office Action's position appears to be that Shinohara's system teaches every element of claim 1, except for "the dropping packets when receives a feedback information," while Yin teaches "dropping packets when it receives resource management information." OA, p. 5. Applicant notes that two references, considered in full, are dealing with very different situations using very different types of feedback. Yin deals with situations in which feedback is provided to a device by the network, while Shinohara describes situations in which feedback is provided from an output module to an input module within the same device. Additionally, Yin deals with a situation in which packets are dropped based on the feedback, while Shinohara deals with a situation in which packet transfer is discontinued based on feedback. To attempt to combine select teachings of the references, without regard to the context in which those teachings are presented, is inappropriate: "It is impermissible within the framework of section 103 to

pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art." *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 230 USPQ 416, 419 (Fed. Cir. 1986).

In Yin, the resource management information is included within a packet received from an ATM network. In contrast, Shinohara describes a back pressure signal that is sent from the output buffer module section to the input buffer module section in order to cause the input buffer module section to stop sending packets to the output buffer module section. Thus, Yin deals with feedback provided to a device by the network, while Shinohara deals with feedback that occurs internally within a device. There is simply no suggestion that behavior (such as dropping packets) that is performed in response to receiving a packet containing resource management information from an ATM network, as taught in Yin, would or even could be performed in response to the internal backpressure signal taught in Shinohara.

Furthermore, neither reference teaches or suggests that such behavior would be desirable. In particular, the cited portions of Shinohara provide no indication that it would be desirable to drop packets in response to the backpressure signal. Similarly, the cited portions of Yin provide no indication that the feedback mechanism disclosed therein would be useful in other situations. Accordingly, when the cited portions of the references are considered in their entirety, there is clearly no teaching or suggestion to implement an output traffic manager that communicates to the ingress receiver to drop inbound packets destined for the selected queue. For at least the above reasons, Shinohara, whether taken alone or in combination with Yin, clearly fails to teach or suggest claim 1.

The cited art would not reasonably be expected to teach or suggest claim 1:

Furthermore, as noted in the previous responses, Shinohara would not be expected to suggest the claimed invention, given that the reference does not suggest a need to drop packets in an ingress receiver in response to a communication from an output traffic manager. Instead, Shinohara focuses on flow control mechanisms that determine when

one stage of a switch can release packets to another stage. For example, in "each output line corresponding queue within the output buffer module section 30, when the queue length Qoxbl exceeds the threshold value Qth_bpoxbl, the output buffer module section 30 originates the back pressure signal (BP_OXBL) 70 to all input buffer module sections. The input buffer module section 20 ceases to transmit cells to the output line to which the BP_OXBL signal 70 has been originated." Shinohara, col. 8, lines 12-20. Thus, Shinohara teaches a flow control technique to control when packets are released by an input stage, not a technique to control when packets are dropped. It is noted that releasing packets from the input stage (i.e., allowing those packets to be transmitted from the input buffer module section 20) is not the same as dropping packets; releasing packets from the input stage controls when those packets will be sent to the output stage, while dropping packets causes packets to be discarded. Furthermore, as discussed above, Shinohara has described how and when packets are dropped in the input buffer module section (based on the occupancy of queues within the input buffer module itself, see, e.g., Shinohara, col. 3, lines 37-44), and these techniques clearly differ from the techniques recited in claim 1. Additionally, Shinohara does not describe any need to drop packets using the techniques described in claim 1.

Yin would also not be expected to teach or suggest the claimed invention, given that Yin is concerned with controlling when packets to be sent over an ATM network are dropped based on signals received from the ATM network. In contrast to Yin's teachings, which involve feedback cells received from the ATM network, claim 1 is concerned with a communication between an output traffic manager and an ingress receiver within an apparatus for switching packets from a network. In other words, Yin teachings concern communication between devices in a network, while claim 1 is concerned with a communication that is internal to a device that switches packets from a network. Accordingly, Yin would not be expected to suggest an "output traffic manager [that] communicates to the ingress receiver to drop inbound packets destined for the selected queue," as recited in claim 1.

There is no suggestion to combine the references:

Additionally, there is no suggestion to combine Shinohara and Yin. The Office Action states that "it would have been obvious... to implement the dropping method of Yin into Shinohara at the input buffer of Shinohara to reduce the traffic load and [sic] during the congested period." OA, page 3. However, there is no evidence that implementing the dropping method of Yin would result in a reduction of traffic load in the system of Shinohara, nor has any portion of either reference been cited in support of this proposition. "To support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references... [S]implicity and hindsight are not the proper criteria for resolving the issue of obviousness." *Ex Parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Int'f 1985).

Furthermore, the feedback mechanisms used in Shinohara and Yin are completely different, and there is no suggestion that a technique used in one system would work in the other. For example, in Yin, an ATM cell is conveyed via an ATM network to provide feedback from the ATM network to the network device. This is drastically different than the technique taught in Shinohara, which involves providing feedback between sections of an ATM switching system via a back pressure signal. It is not clear how feedback techniques involving transmitting cells via a network are relevant to feedback techniques involving conveying a back pressure signal within an ATM switching system, nor is it clear that such techniques could be combined. Applicant cannot identify any successful way to combine Yin and Shinohara, especially given the extreme differences between the feedback mechanisms described in each reference.

Additionally, it is unlikely that the combination of Yin and Shinohara would arise, given that the use of one of these flow control techniques (e.g., such as that taught in Yin) is likely to render the use of another flow control technique (e.g., such as that taught in Shinohara) unnecessary. For example, if Shinohara is used, there does not appear to be any need for packets to be dropped based on feedback (whether received from the network or from another section of the device), since Shinohara's system prevents too

many packets from being sent to an output buffer module section that has generated a back pressure signal. Similarly, if Yin is used to control when packets are dropped, there does not appear to be a need for a technique like that taught in Shinohara. Thus, there appears to be no reason for the references to be combined.

Even if the references are combined, the resulting combination does not teach claim 1:

Even if Shinohara and Yin could be successfully combined, the resulting combination fails to teach or suggest the claimed invention. At best, the claimed combination would drop packets in response to a cell received from an ATM network (as taught in Yin) and would prevent packets from being released from an input section to an output section if the output section has asserted a back pressure signal (as taught in Shinohara). Thus, the combination still clearly fails to teach or suggest the claimed invention.

If Shinohara were modified as suggested by the Examiner, so that Shinohara's input buffer module dropped packets in response to the backpressure signal (as opposed to ceasing to send packets to the output buffer module, as performed by the unmodified input buffer module), the output buffer module in Shinohara could still overflow, which is the condition Shinohara explicitly seeks to avoid. In particular, if modified as suggested, the input buffer module could still send packets to the output buffer module, after beginning to drop packets. This in turn could force the output buffer to drop packets. If a proposed modification would render the prior art feature inoperable for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984).

Claim 1 is patentable over the cited art for at least the foregoing reasons. Claims 2-14 are patentable over the cited art for at least the reasons provided above with respect to claim 1. Claims 15-38 are patentable for similar reasons to those provided above with respect to claim 1.

The cited art does not teach or suggest claim 7:

Additionally, as noted in the previous response, the cited art fails to teach or suggest an ingress receiver that discontinues inbound packet drop after a predetermined time, as recited in claim 7. The Office Action states that Shinohara teaches the features of this claim, but does not cite any portion of Shinohara. Instead, the Office Action states that "it is inherently to know that the ingress which has to drop a packet in time limit or predetermined time so the communication system returning to normal service." OA, page 3.

The rejection clearly fails to describe how the cited art teaches the features of claim 7. Furthermore, even if the cited art does inherently teach dropping a packet within a time limit or predetermined time, such a teaching is irrelevant to whether the cited art teaches an ingress receiver that "discontinues inbound packet drop after a predetermined time." Dropping a packet within a time limit relates to the situation in which one particular packet is dropped relative to some stimuli, while discontinuing inbound packet drop relates to the situation in which an ingress receiver stops dropping inbound packets relative to when the ingress receiver begins dropping inbound packets. These two concepts are clearly not equivalent. Accordingly, claim 7 is clearly patentable over the cited art. Claims 22, 30, and 38 are additionally patentable over the cited art for similar reasons.

CONCLUSION

In view of the remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned at 512-439-5087.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, COMMISSIONER FOR PATENTS, P. O. Box 1450, Alexandria, VA 22313-1450, on April 10, 2006.

Brenna A. Brock — 4-10-2006

Attorney for Applicant(s) — Date of Signature

Respectfully submitted,

Brenna A. Brock

Brenna A. Brock
Attorney for Applicants
Reg. No. 48,509
(512) 439-5087 [Phone]
(512) 439-5099 [Fax]